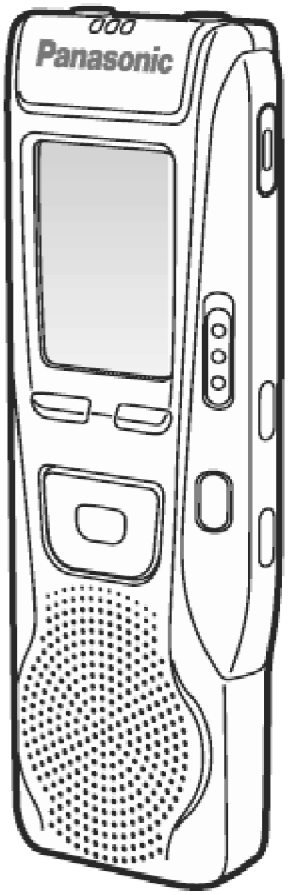
ORDER NO. AD0402034C2

IC Recorder

RR-QR160E

Colour

S.....Silver Type



SPECIFICATIONS

Specification

Power output:	**300mW(max.)**
Frequency response:	**240Hz - 5,100Hz(HQ mode) / 230Hz - 3,400Hz(FQ/SP mode)**
S/N:	**36dB(HQ mode)**
Jack:	
Output jack;	**Earphone, 3.5mm(1/8in.), 0.5mW 16 Ω**
Input jack;	**Mic, 3.5mm(1/8in.), 0.56mV plug in power**
Speaker:	**28mm(1-3/32in.) 8 Ω**
Power requirement:	**DC 3V / 2 AAA size (LR03, AM-4) batteries**
Dimensions (W×H×D):	
Max dimensions;	**35.0×99.6×24.0mm / (1-3/8×3-29/32×15/16in.)**
Cabinet dimensions;	**32.8×99.3×22.5mm / (1-9/32×3-29/32×7/8in.)**
Mass:	
with batteries;	**About 61g (2.2oz.)**
without batteries;	**About 38g (1.4oz.)**
Operational temperature range:	**0°C-40°C (32°F-104°F)**
Battery life:	
[When used at 25°C(77°F) on a flat, stable surface]	
Panasonic alkaline batteries;	
Playback;	**About 10 hours (HQ mode) / About 12 hours (FQ/SP mode)**
Recording;	**About 15 hours (HQ mode) / About 20 hours (FQ/SP mode)**

***The battery life may be less depending on the operating conditions.**

Note:

Specifications are subject to change without notice. / Mass and dimensions are approximate.

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Panasonic

1. Control Guide

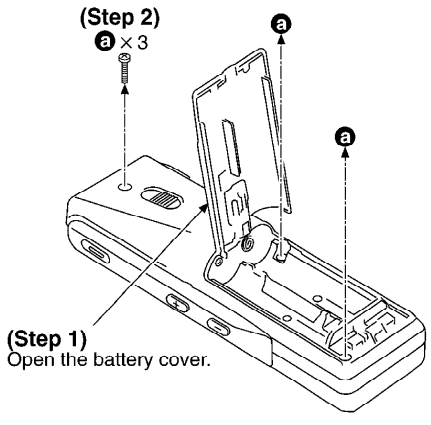
2. Operation Checks and Component Replacement Procedures

- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.

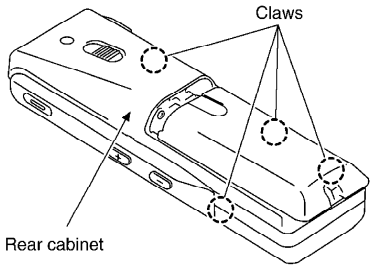
- For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

2.1. Checking for the P.C.B.

2.1.1. Checking for the P.C.B. (A side)



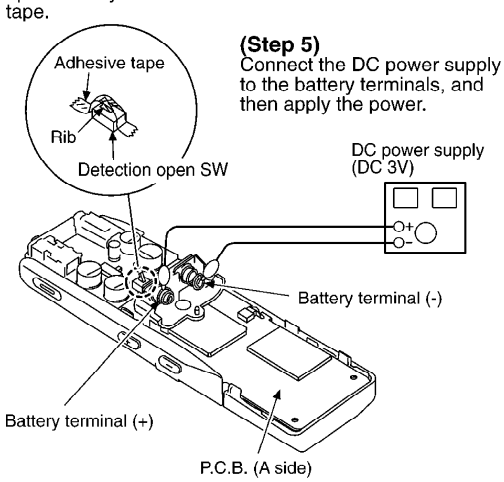
(Step 3)
Release the 4 claws, and then remove the rear cabinet .



- Check the P.C.B. (A side) as shown below.

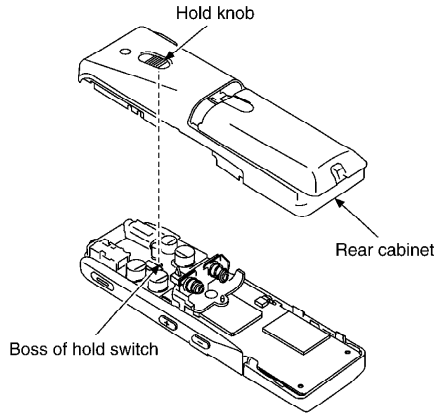
(Step 4)
Press the rib of detection open SW by adhesive tape.

(Step 5)
Connect the DC power supply to the battery terminals, and then apply the power.



Notice for installation of rear cabinet

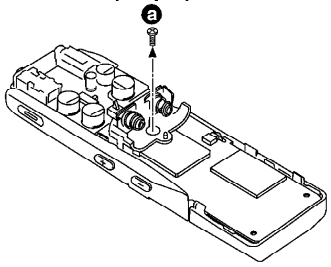
・Align the hold knob with the boss of hold switch, and then install the rear cabinet .

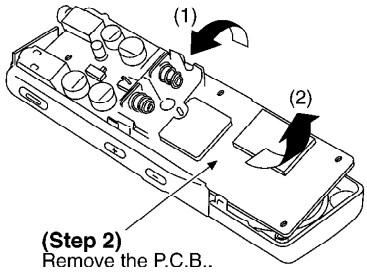


2.1.2. Checking for the P.C.B. (B side)

- Follow the (Step 1)-(Step 4) of item 4.1.1.

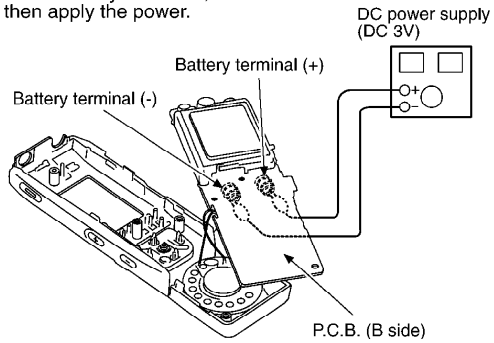
(Step 1)





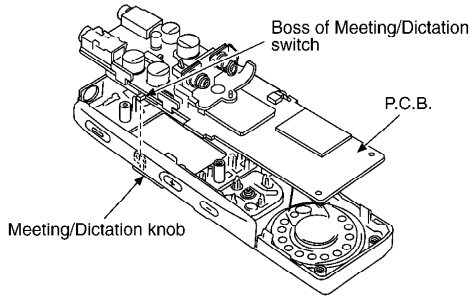
(Step 2)
Remove the P.C.B..

(Step 3)
Connect the DC power supply to the battery terminals, and then apply the power.



Notice for installation of P.C.B.

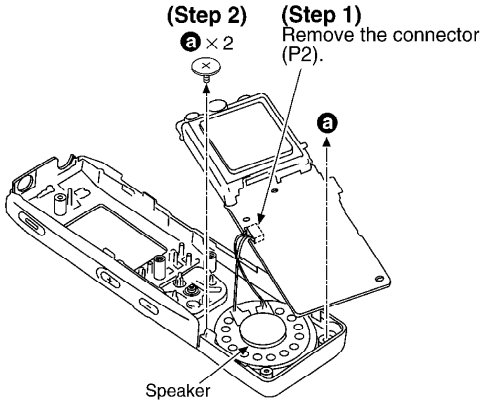
- Align the Meeting/Dictation knob with the boss of Meeting/Dictation switch, and then install the P.C.B..



2.2. Replacement for the speaker

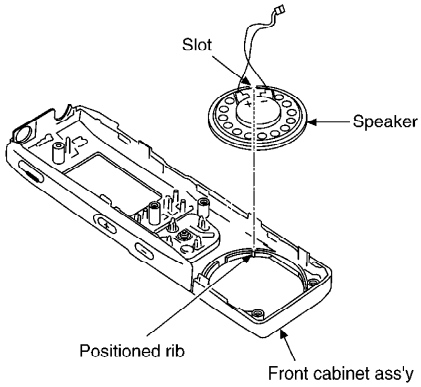
- Fllow the (Step 1)-(Step 3) of item 4.1.1.

- Follow the (Step 1), (Step 2) ofitem 4.1.2.



Notice for installation of speaker

- Align the slot of speaker with the positioned rib of front cabinet ass'y.

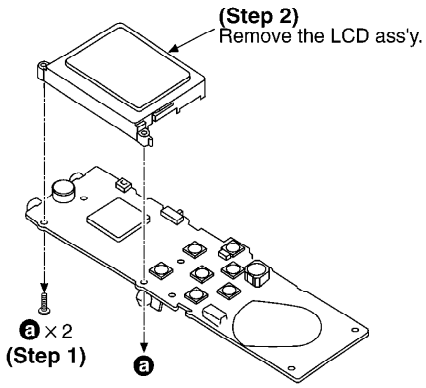


2.3. Replacement for the LCD

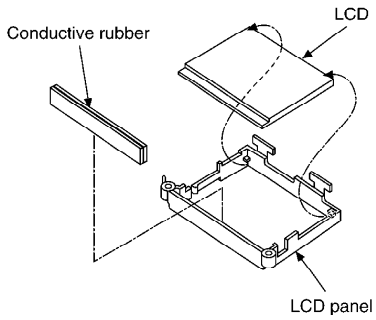
- Fllow the (Step 1)-(Step 3) of item 4.1.1.

- Fllow the (Step 1), (Step 2) of item 4.1.2.

- Fllow the (Step 1) of item 4.2.



(Step 3)
Remove the LCD and conductive rubber from LCD panel.



NOTE:
Be careful not to be applied the dust or smudge on the surface conductive rubber.

3. Schematic Diagram

3.1. Schmatic Diagram Notes

(This schematic diagram may be modified at any time with development of new technology.)

- S1 : Stop switch (■).

- S2 : Playback switch (▶).

- S3 : Fast forward switch (▶▶).

- S4 : Rewind switch(◀◀).

- S5 : Folder, Menu switch

(• FOLDER / ▬ MENU).

- S6 : Recording mode switch (REC MODE).
- S7 : Erase switch (ERASE).
- S8 : Recording/Stop switch (REC/STOP).
- S9 : Volume (+) switch.
- S10 : Volume (-) switch.
- S13 : Hold switch (HOLD) in “OFF” position.
- S14: Batt. cover open det. switch.

- S18: Meeting/Dictation select switch (MEETING/DICTATION) in "MEETING" position.
- DC voltage measurements are taken with electronics voltmeter. The negative terminal of the battery provides negative meter connection point.
  No mark.....Recording, ( ).....Playback
- Important safety notice
  Components identified by ⚠ mark have special characteristics impotant for safety.
  When replacing any of components, use only manufacturer's specified parts.
- Signal lines

: Sound source signal (ANALOG) line

: Sound source signal (DIGITAL) line

: Positive voltage line

3.2. Schematic Diagram

4. Printed Circuit Board Diagram

5. Type Illustration of IC's, Transistors and Diodes

6. Block Diagram

7. Operation Check Mode

This unit is equipped with the functions to check it to record or playback usually and the display of LCD.

Caution!

When the checking operation is performed, all recorded data will be cleared.

Note:

- When there are no available items of any track, the unit can not be operated to check it to record and playback. / To continue record and playback check, erase unneeded items.

- For operation check mode, external microphone(not included), earphone(not included).

Note:

- You can use a condenser microphone without a built-in power supply. Plug type: 3.5mm (1/8in) monaural.
- Earphone: Plug type; 3.5mm (1/8in) monaural.

7.1. To Enter Operation Check

1. Plug the external microphone into the [MIC (PLUG IN POWER)] jack.
2. Set the HOLD mode.
3. Slide the rec position switch in DICTATION.
4. While hold down the VOL+ switch, press the ERASE switch and press the STOP switch at short time.

   Note:

   The item 4 shown above should be operate within 0.5 seconds.
5. After all segment of LCD lights up, the unit is entered to Operation Check Mode. During the Operation Check Mode, the Recording LED is blinking.

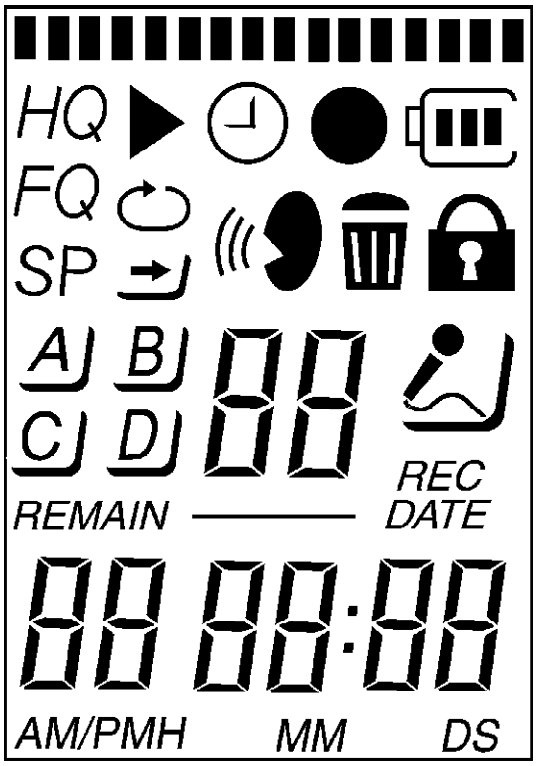
7.2. Operation Check Method

Note:

The LCD indications shown below are examples of operation check mode with the folder A and no recording data.

1. Check all segment of LCD lights up. (fig.1)

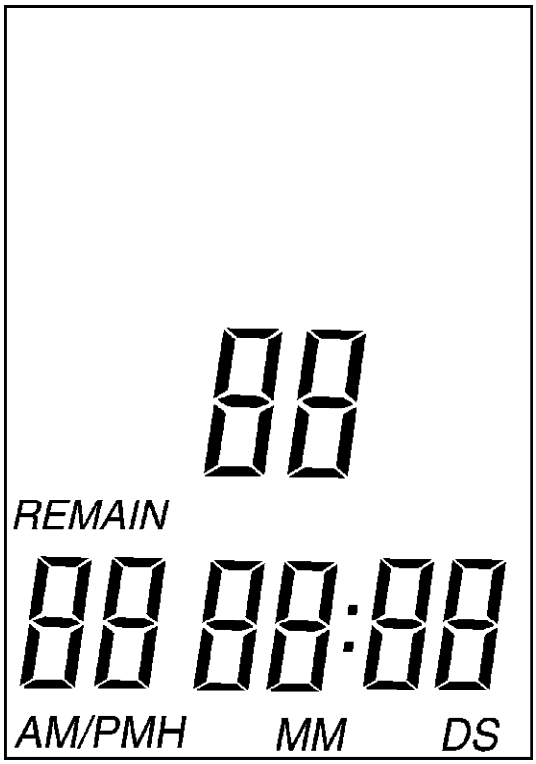
fig.1



2. Release the HOLD mode.

3. Check the display of LCD is displayed as shown below. (fig.2)

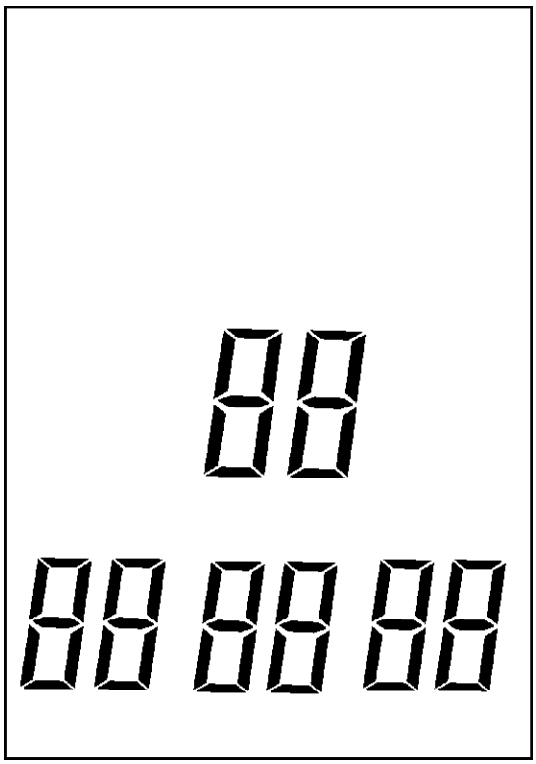
fig.2



4. Press the REC switch.

5. Make sure that the LCD indication is as shown below and BEEP sound is heard.(fig.3)

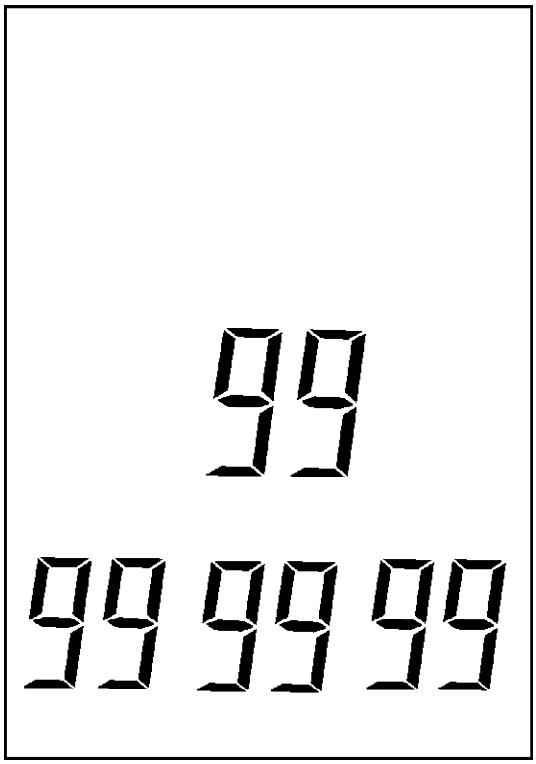
fig.3



6. Press the VOL+ switch.

7. Check the display of LCD is displayed as shown below. (fig.4)

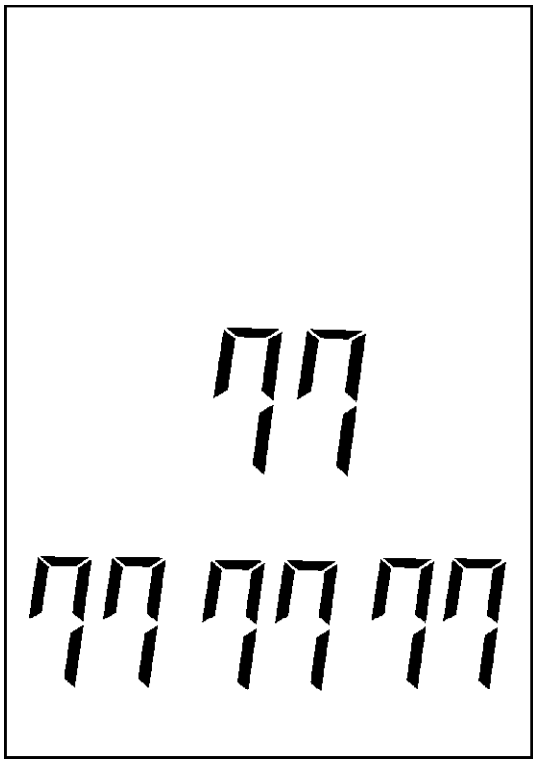
fig.4



8. Press the VOL- switch twice.

9. Check the display of LCD is displayed as shown below. (fig.5)

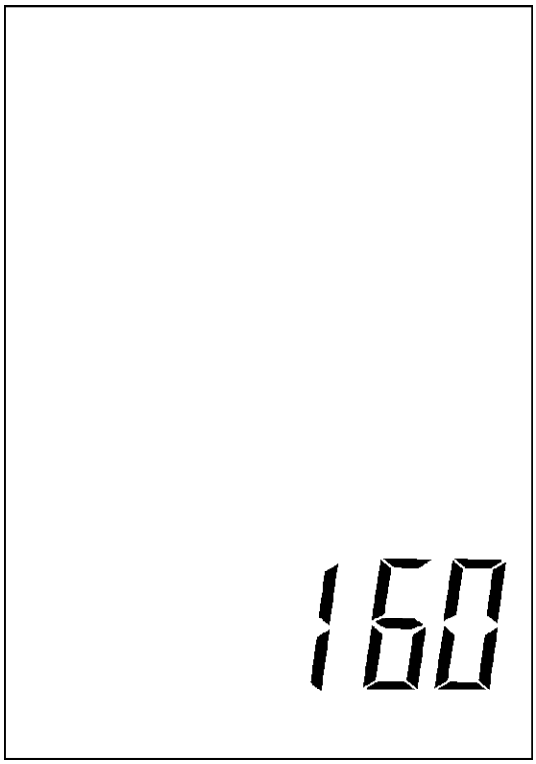
fig.5



10. Press the REC MODE switch.

11. Check the display of LCD is displayed as shown below. (fig.6)

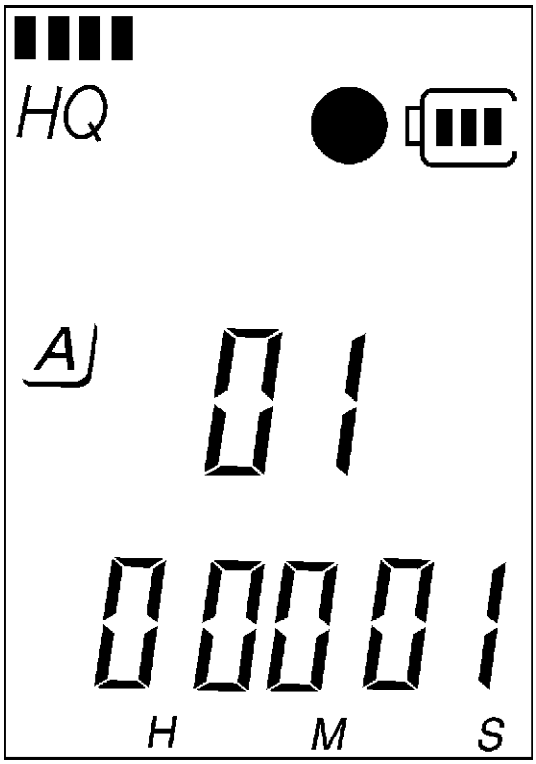
fig.6



12. Press the FWD switch and record a sound source signal (Piano reproduction sound) from External Microphone.

13. Make sure that LCD recording time indication is on.(fig.7)

fig.7



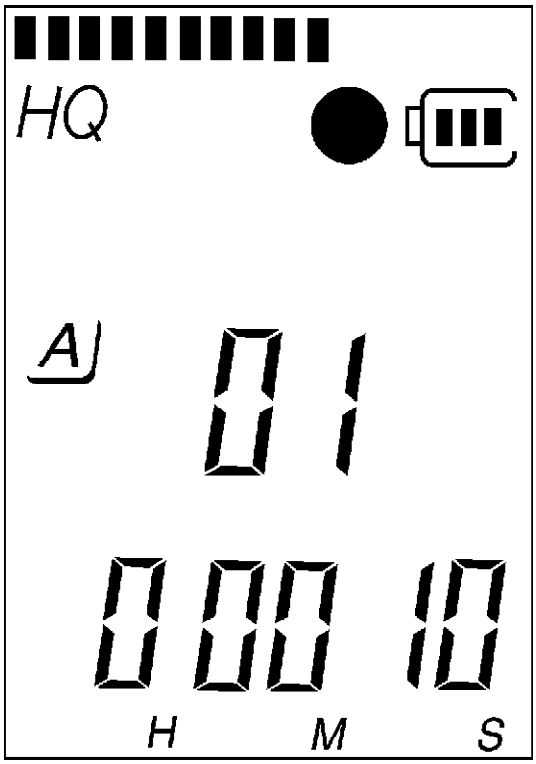
14. Make it a non-signal input and level meter should not move.

15. Record a sound source signal (1KHz, -72dB) from External Microphone.

16. Press the Folder switch and it records following an item 15. / From the time of an item15, meter should move greatly.

17. Make sure that LCD recording level indication moves. (Recording level indication changes according to the input level.) (fig.8)

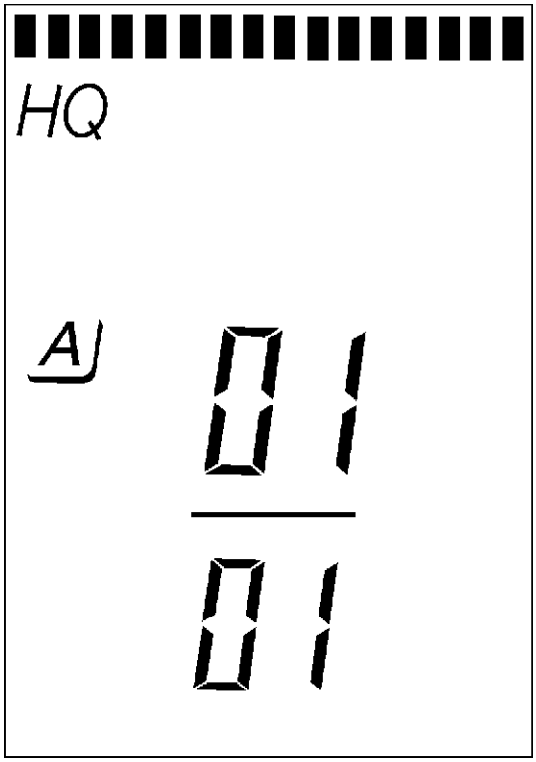
fig.8



18. Press the STOP switch.

19. Check the display of LCD is displayed as shown below.(fig.9)

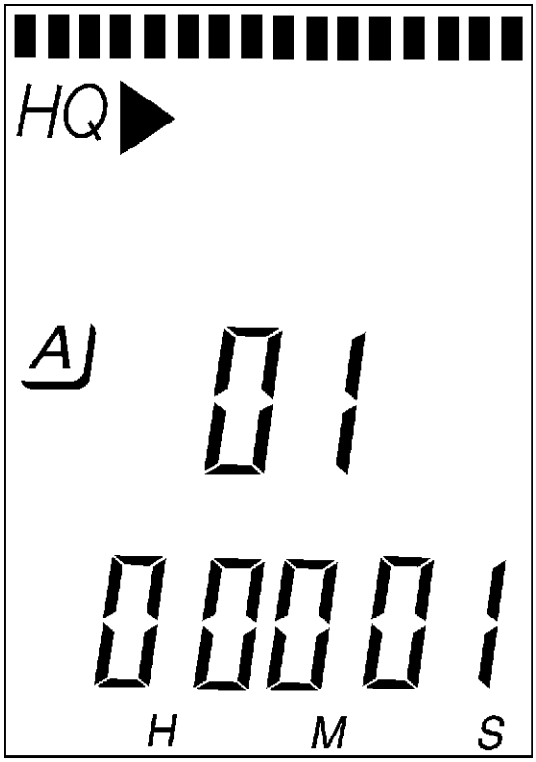
fig.9



20. Press the PLAY switch to playback.

21. Make sure that LCD play time indication is on and sound is heard from the speaker.(fig.10)

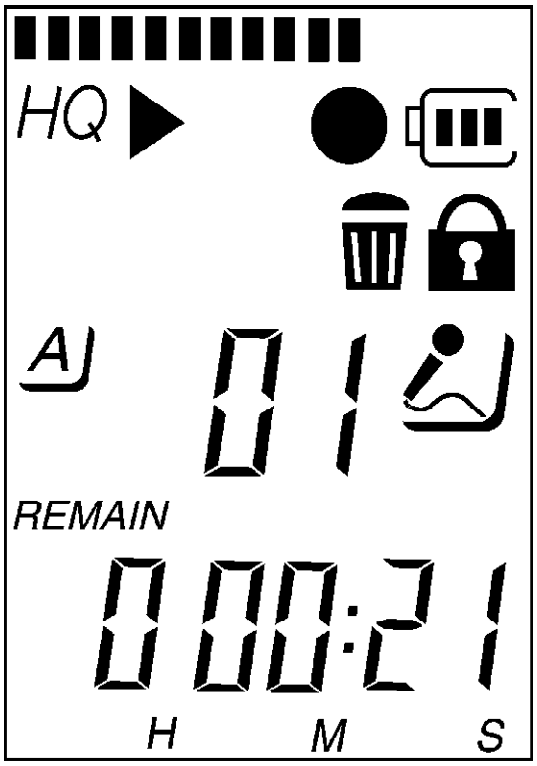
fig.10



22. Press the ERASE switch.

23. Check the display of LCD is displayed as shown below.(fig.11)

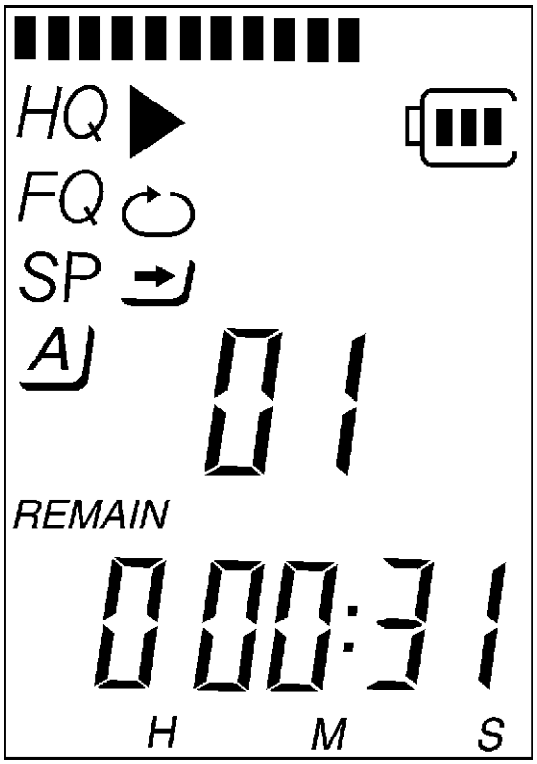
fig.11



24. Insert the earphone in the earphone jack, and press the REW switch. Make sure that sound is heard from the earphone and no sound from the speaker.

25. Check the display of LCD is displayed as shown below.(fig.12)

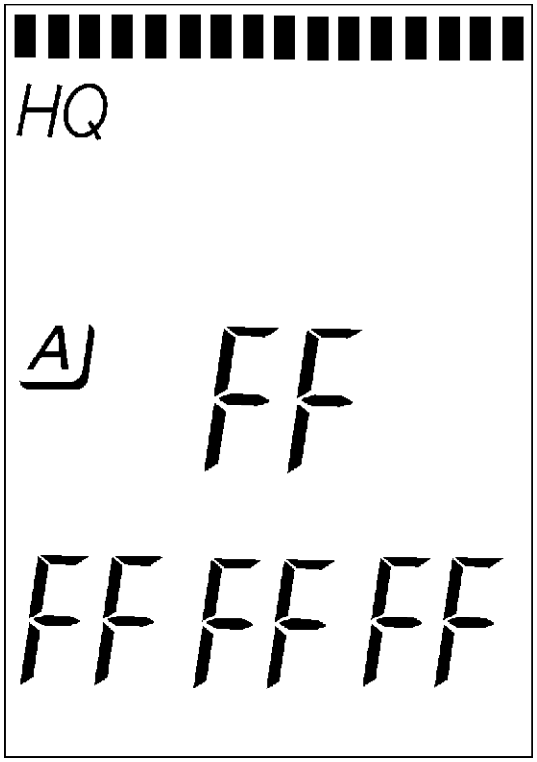
fig.12



26. REC MODE switch is changed to “MEETING”.

27. Check the display of LCD is displayed as shown below.(fig.13)

fig.13



28. Operation Check Mode is canceled when the battery cover is

opened.

8. Troubleshooting

8.1. Unit won´t play

-Checking the Analog System-

8.2. Cannot Delete

Take the steps outlined in <2> Check the Data Transmission Between IC 4 and IC 9 of 9.4.
Confirm that the pulse characteristics change in IC 9 pin 9 (/CE) and pin 7 (R/B) during deleting.
When deleting one file alone = change during period of approximately 50 ms.
When deleting all files = change during period of approximately 200 ms.

8.3. Unit won´t play

-Checking the Analog System-

8.4. Unit won´t record

-Checking the Digital System-

<1> Check the Data Transmission Between IC 2 and IC 4.

1. Checking IC 2 Pulse Cycle and Clock Frequency.

Categories to be Measured	Pin No.	Mode		
		HQ	FQ	SP
Pulse frequency*1	27(ACKN)	15 ms	15 ms	15 ms
Clock frequency	52(XIN)	4.096MHz	4.096MHz	4.096MHz

<2> Check the Data Transmission Between IC 4 and IC 9.
2. Check the IC 9 Pulse Cycle and the Clock Frequency.

Categories to be Measured	Pin No.	Mode		
		HQ	FQ	SP
Pulse frequency*1	9(/CE)	0.28s	0.56s	0.96s
Clock frequency	18(/WE)	500 kHz (approx.)	500 kHz (approx.)	500 kHz (approx.)

8.5. Unit won´t play

-Checking the Digital System-
<1> Check the Data Transmission Between IC 2 and IC 4.
1. Checking IC 2 Pulse Cycle and Clock Frequency.

Categories to be Measured	Pin No.	Mode		
		HQ	FQ	SP
Pulse frequency*1	27(ACKN)	15 ms	15 ms	15 ms
Clock frequency	52(XIN)	4.096MHz	4.096MHz	4.096MHz

<2> Check the Data Transmission Between IC 4 and IC 9.
2. Check the IC 9 Pulse Cycle and the Clock Frequency.

Categories to be Measured	Pin No.	Mode		
		HQ	FQ	SP
Pulse frequency*1	9(/CE)	0.28s	0.56s	0.96s
Clock frequency	8(/RE)	600 kHz (approx.)	600 kHz (approx.)	600 kHz (approx.)

9. Terminal Function of IC's

9.1. IC4 (MN101C38CLH) : / System Control / LCD Drive

No.	Mark	I/O Division	Function
1 ~ 4	COM3 ~ COM0	O	LCD segment signal outputs
5	VLC3	—-	LCD reference voltage input termnal
6 ~ 7	VLC2 ~ VLC1	I	LCD reference voltage input termnal
8	VDD	—	Power supply terminal (3.3V)
9	OSC2	O	Main system clock output (f =8.19MHz)
10	OSC1	I	Main system clock input (f= 8.19MHz)
11	Vss	—	DGND terminal
12	XI	I	Crystal oscillator termial (f= 32.768kHz)
13	XO	O	Crystal oscillator terminal (f =32.768kHz)
14	MMOD	I	Mode select terminal (always L)
15	VREF-	—	Reference voltage input terminal
16	KYE IN	I	Switch detection terminal (STOP/PLAY/FAST FORWARD/REWIND/MENU/ REC MODE/ERASE/REC/ MEETING/DICTATION/VOL)
17	REC LEVEL METER	I	REC signal A/D input
18	HOLD	I	Switch detection terminal (HOLD)(L:On)
19	VBAT	I	Battery voltage input
20	FLASH SELECT	I	REC Position key
21	LSI BUSY	I	LSI play monitor signal input
22	FLS RB	I	Flash-Memory ready/busy input
23	PA7	I	High speed/Low speed change.
24	VREF+	—	Reference voltage(+) input terminal (always VDD)

			terminal (always VDD)

No.	Mark	I/O Division	Function
25	BACK LIGHT	O	CODEC clock select signal output (L:5M/H:4M)
26	FLSCLE	O	Flash-Memory command latch enable output
27	EP IN	I	EP detection input
28	LSI CS	O	chip select [CODEC(IC2)]
29	FLS CS	O	chip select (Flash-Memory)
30	FLS ALE	O	command/data ratch output
31	DK	—	N.C.
32	RST RU	I	Reset signal input
33	LSI RST	O	LSI reset output
34	DC IN DET	O	Data command select signal output (command:L)
35	P12(TM2IO)	—	Not used, open
36	4MCLK IN	O	CODEC(IC2) Clock select signal output
37	MIC SENSE	O	At the time of the microphone sensitivity high :H (H:sens-H, L:sens-L)
38	IRQ0	I	N.C.
39	USB INTR	I	USB interruption request signal input
40	USB IN	I	USB connection detection input
41	DET OPEN	I	Switch detection terminal (H:Open, L:Close) (Battery cover open/close detection)
42	BAT OFF L	I	Battery detection terminal
43	P30	—	not used, open
44	CLK 12ML	—	It is a change output to CLK 12M during USB connection detection.
45	LP H	—	N.C.
46	WE	O	CODEC/MEMORY parallel port output
47	RE	O	Parallel port output/ Memory silialclock output
48	CS	—	USB LSI CS output (ORD output with P77)
49	P53	—	AD convert drive L output. not used.

No.	Mark	I/O Division	Function
50	PLAY L	O	Play power amp. drive output
51 ~ 57	A0 ~ A6	O	Address BUS (USB)
58	A7	—	Not used.
59	MUTE	O	Mute signal output (H: Mute)
60	/REC LED	O	REC LED drive signal (L: Lighting)
61	REC H	O	REC "H" output
62	CLK OFF L	O	Clock oscillation circuit stop signal output
63	D74	—	Not used, open.
64	PLAY H	—	Not used, open.
65	USB RST	O	USB reset signal
66	USB CS	O	Chip select (USB)
67 ~ 74	D7 ~ D0	I/O	C/F data command BUS
75	SEG25	—	Not used, open.
76 ~ 100	SEG24 ~ SEG0	O	LCD segment signal output

10. Replacement Parts List

Note:

- Important safety notice:

- Components identified by ⚠ mark have special characteristics important for safety.

- Furthermore, special parts which have purposes of fireretardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

- When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

- The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) / Parts without these indications can be used for all areas.

- Capacity values are in microfarads (uF) unless specified otherwise,

P=Pico-farads (pF) F=Farads (F)

- Resistance values are in ohms, unless specified otherwise, 1K= 1,000 (OHM), 1M=1,000k (OHM)
- The marking [RTL] indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.
- All parts are supplied by SPC.

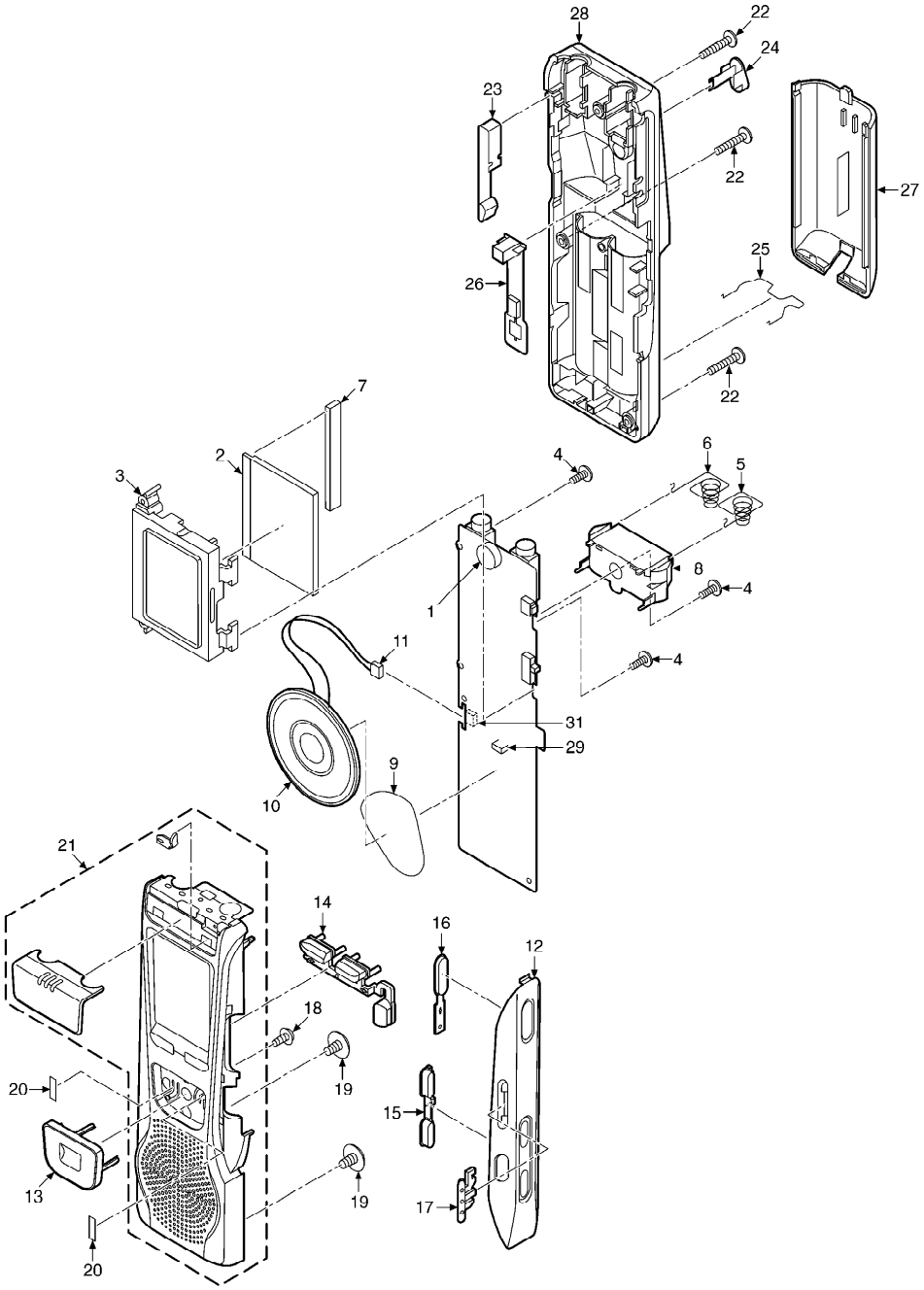
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RJM0019	MICROPHONE(M1)	1	L0CBAB000036
2	L5AAACC00006	LCD	1	
3	RGP1049-Q	PANEL,LCD	1	
4	RHE5162ZA	SCREW	3	
5	RJC40026-1	BATTERY TERMINAL +	1	
6	RJC80027	BATTERY TERMINAL -	1	
7	RMG0645-W	CONDUCTIVE RUBBER	1	
8	RMR1604-K	HOLDER,BATT.TERMINAL	1	
9	RMZ0727	SHEET	1	
10	RAS3P16-U	SPEAKER	1	
11	REX1184	LEAD WIRE,SPEAKER	1	
12	RGK1743-H	ORNAMENT	1	
13	RGU2269-S	BUTTON,PLAY	1	
14	RGU2270-S	BUTTON,MODE	1	
15	RGU2271-S	BUTTON,VOL +/-	1	
16	RGU2272-R	BUTTON,REC/STOP	1	
17	RGV0330-S	KNOB,MEETING/DICTATE	1	
18	RHD14083	SCREW	1	
19	RHD20025	SCREW	2	
20	RMQ1355	SPACER	2	
21	RYK1355-S	FRONT CABINET ASS'Y	1	
22	RHQ0051-K	SCREW	3	
23	RGQ0386-S	CLIP	1	
24	RGV0331-H	KNOB,HOLD	1	
25	RJC94018	BATTERY TERMINAL +/-	1	
26	RMR1603-H	CONNECT PIECE,BATT.COVER	1	
27	RKK0176B-H	BATTERY COVER	1	
28	RKS0393-H	REAR CABINET	1	
29	EYF8CU	TERMINAL(J1)	1	
31	K1KA02B00215	CONNECTOR(P2)	1	
A1	RQT7164-E	O/I BOOK	1	Germany, / French, / Itarian, / Spanish, / Duch, / Chinese, / Arabic, / Swedish, / Danish, / Russian, / Czech, / Polish, / Portuguese
A1	RQT7165-B	O/I BOOK	1	English
C2	ECJ0EB1C223K	16V 0.022U	1	
C3,C4	ECJ0EB1A104K	10V 0.1U	2	
C5	F1G1C103A044	16V 0.01U	1	
C7	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C8	ECJ0EB1A104K	10V 0.1U	1	
C10	F1G1C103A044	16V 0.01U	1	
C11	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457
C14	ECJ0EB1A104K	10V 0.1U	1	
C15	F1H0J474A002	6.3V 0.47U	1	
C16	ECJ0EB1A104K	10V 0.1U	1	
C17	EEE0GS220SR	4V 22U	1	
C18	ECJ0EB1A104K	10V 0.1U	1	
C19	F1G0J105A001	6.3V 1U	1	
C20-23	ECJ0EB1A104K	10V 0.1U	4	
C25	ECJ0EB1A104K	10V 0.1U	1	
C26	F3F0J106A007	6.3V 10U	1	
C27	F3E0J1060007	6.3V 10U	1	
C28	F3F0J226A004	6.3V 22U	1	
C29	ECJ0EB1A104K	10V 0.1U	1	
C30	ECUE1H220JCQ	50V 22P	1	ECJ0EC1H220J
C31	F1G1H120A451	50V 12P	1	
C32	ECJ0EB1A104K	10V 0.1U	1	
C33	EEE0GA101SR	4V 100U	1	
C34	ECJ0EB1A104K	10V 0.1U	1	
C35	F1G1C103A044	16V 0.01U	1	
C36	F3E0J1060007	6.3V 10U	1	
C37	F3H0J227A001	6.3V 220U	1	
C38	EEE0GA331WP	4V 330U	1	
C39	EEE0GA221SP	4V 220U	1	
C40	F3F1A106A001	10V 10U	1	
C41	ECJ0EB1A104K	10V 0.1U	1	
C45	EEE0JA221WP	6.3V 220U	1	
C49	ECJ0EB1E102K	25V 1000P	1	
C50	F1G1C103A044	16V 0.01U	1	
C60	ECJ0EB1A104K	10V 0.1U	1	
C74	F1G1C103A044	16V 0.01U	1	
C90-92	ECUE1H102KBQ	50V 1000P	3	F1G1H102A457
C93	F1G1H101A494	50V 100P	1	
D1	B3AAB0000075	LED	1	
D2	MA735TX	DIODE	1	MA2Q73500L
D3	MA2S11100L	DIODE	1	
D5	MA735TX	DIODE	1	MA2Q73500L
D6,D7	MA2S728	DIODE	2	
D8	MA2S11100L	DIODE	1	
IC2	C2HBBJ000042	IC	1	
IC4	MN101C38CLH	IC	1	
IC6	C0EBD0000074	IC	1	
IC8	C0DBAGC00020	IC	1	
IC9	C3FBQC000014	IC	1	
IC12	C0EBB0000036	IC	1	
IC13	C0ABAB000108	IC	1	
JK1	K2HC104E0005	JACK,EARPHONE	1	
JK2	K2HC103E0014	JACK,MICROPHONE	1	
L1	G1C470Z00014	COIL	1	

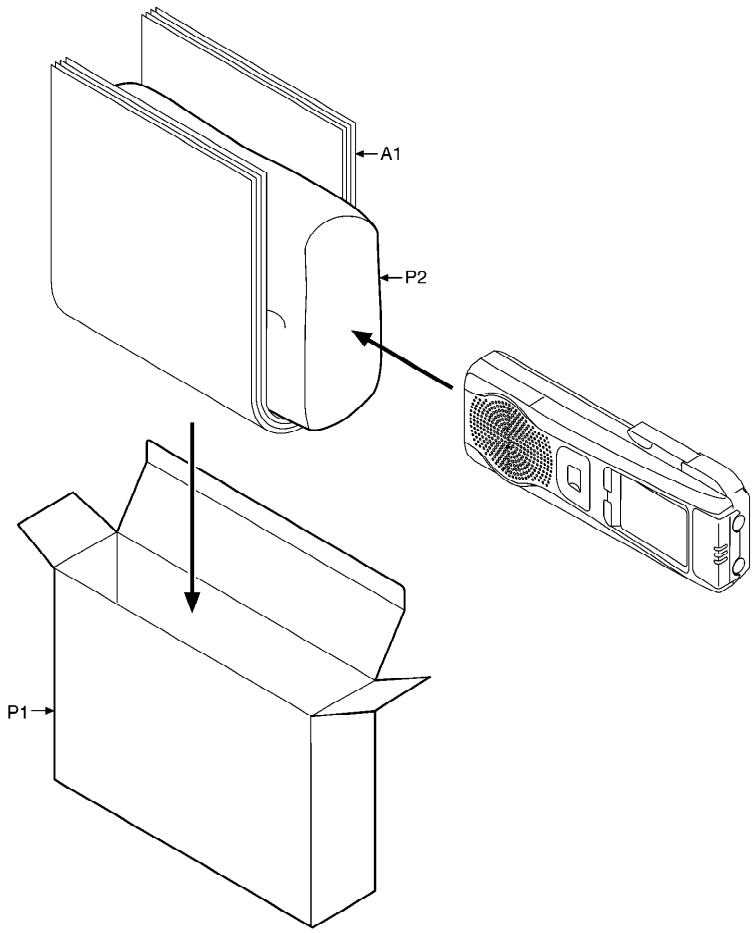
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
L2-L8	J0JAC0000055	COIL	7	
L9-11	VLP0323A601R	COIL	3	J0JCC0000062
LB1	ERY32SB075VA	IC PROTECTOR	1	
P1	RPK2062	GIFT BOX	1	
P2	RPF0317-2	PROTECTION BAG	1	
PCB1	REP3680A-M	MAIN P.C.B. ASS'Y	1	
Q1	B1CFHB000003	TRANSISTOR	1	
Q6	B1CFHB000003	TRANSISTOR	1	
Q9,10	2SB1295-6-TB	TRANSISTOR	2	B1ADKB000001
Q13,14	B1CFHB000003	TRANSISTOR	2	
Q17	2SD2216J0L	TRANSISTOR	1	
R1	ERJ2GEJ105	1/16W 1M	1	
R2	ERJ2GEJ222X	1/16W 2.2K	1	ERJ2RMJ222X
R3	ERJ2GEJ223X	1/16W 22K	1	ERJ2RMJ223X
R4	ERJ2GEJ6R8X	1/16W 6.8	1	
R5	ERJ2GEJ473X	1/16W 47K	1	ERJ2RMJ473X
R6	ERJ2GEJ104	1/16W 100K	1	
R7	ERJ2GEJ223X	1/16W 22K	1	ERJ2RMJ223X
R8	ERJ2GEJ101	1/16W 100	1	
R10	ERJ2GEJ222X	1/16W 2.2K	1	ERJ2RMJ222X
R11	ERJ2GEJ820X	1/16W 82	1	
R12	ERJ2GEJ475	1/16W 4.7M	1	
R14	ERJ2GEJ563X	1/16W 56K	1	
R16	ERJ2GEJ474	1/16W 470K	1	
R19	ERJ2GEJ103	1/16W 10K	1	
R20	ERJ2GEJ154	1/16W 150K	1	
R21-23	ERJ2GEJ474	1/16W 470K	3	
R24	ERJ2RHD103X	1/16W 10K	1	
R25	ERJ2RHD112	1/16W 1.1K	1	
R26	ERJ2RHD122	1/16W 1.2K	1	
R27	ERJ2RHD152	1/16W 1.5K	1	
R28	ERJ2RHD202	1/16W 2K	1	
R29	ERJ2RHD272X	1/16W 2.7K	1	
R30	ERJ2RHD362X	1/16W 3.6K	1	
R31	ERJ2RHD562	1/16W 5.6K	1	
R32	ERJ2RHD912	1/16W 9.1K	1	
R33	ERJ2RHD183	1/16W 18K	1	
R34	ERJ2GED563X	1/4W 56K	1	ERJ2RHD563X
R37	ERJ2GEJ222X	1/16W 2.2K	1	ERJ2RMJ222X
R38	ERJ2GEJ105	1/16W 1M	1	
R39	ERJ2GEJ472X	1/16W 4.7K	1	ERJ2RMJ472X
R40	ERJ2GEJ105	1/16W 1M	1	
R41	ERJ2GEJ100	1/16W 10	1	
R44	ERJ2GEJ101	1/16W 100	1	
R45	ERJ2GEJ104	1/16W 100K	1	
R47	ERJ2GEJ103	1/16W 10K	1	
R48,49	ERJ2GEJ105	1/16W 1M	2	
R50	ERJ2GEJ103	1/16W 10K	1	
R51	ERJ2GEJ102X	1/16W 1K	1	ERJ2RMJ102X

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R52	ERJ2GEJ105	1/16W 1M	1	
R55	ERJ2GEJ102X	1/16W 1K	1	ERJ2RMJ102X
R56	ERJ2GEJ332X	1/16W 3.3K	1	ERJ2RMJ332X
R57	ERJ2GEJ472X	1/16W 4.7K	1	ERJ2RMJ472X
R58	ERJ2GEJ332X	1/16W 3.3K	1	ERJ2RMJ332X
R59	ERJ2GEJ103	1/16W 10K	1	
R60	ERJ2GEJ473X	1/16W 47K	1	ERJ2RMJ473X
R61	ERJ2GEJ154	1/16W 150K	1	
R62	ERJ2GEJ100	1/16W 10	1	
R64,65	ERJ2GEJ105	1/16W 1M	2	
R66	ERJ2GEJ104	1/16W 100K	1	
R67,68	ERJ2GEJ105	1/16W 1M	2	
R70	ERJ2GEJ104	1/16W 100K	1	
R72	ERJ2GEJ681X	1/16W 680	1	ERJ2RMJ681X
R91	ERJ2GE0R00X	1/16W 0	1	
R99	ERJ2GEJ102X	1/16W 1K	1	ERJ2RMJ102X
R105	ERJ2GE0R00X	1/16W 0	1	
R160	ERJ2GEJ4R7X	1/16W 4.7	1	ERJ2RMJ4R7X
RX1	D1H447120002	470	1	
RX2	D1H81024A024	1K	1	
RX3	D1H410220001	1K	1	
RX4	D1H84724A024	4.7K	1	
S1	K0H1BA000432	SW,STOP	1	
S2	K0H1BA000432	SW,PLAY	1	
S3	K0H1BA000432	SW,UP	1	
S4	K0H1BA000432	SW,DOWN	1	
S5	K0H1BA000432	SW,MENU	1	
S6	K0H1BA000432	SW,REC MODE	1	
S7	K0H1BA000432	SW,ERACE	1	
S8	EVQP7L01K	SW,REC/STOP	1	
S9	EVQP7L01K	SW,VOL +	1	
S10	EVQP7L01K	SW,VOL -	1	
S13	RSS2A010-1A	SW,HOLD	1	K0D112B00071
S14	K0KABA000012	SW,DET.OPEN	1	
S18	RSS2A010-1A	SW,REC POSITION	1	K0D112B00071
X1	H2D819400002	CERAMIC OSCILLATOR	1	
X2	RSXC32K7L04T	CRYSTAL OSC	1	H0J327200048

11. Cabinet Parts Location



12. Packaging



13. Schematic Diagram for printing with letter size

K0402YH/HH

:POSITIVE VOLTAGE LINE :SOUND SOURCE SIGNAL(DIGITAL) LINE

LCD1(L5AAACC00006)
LCD DISPLAY

X1 (8.19MHz)
X2 (32.768kHz)
C30 22P
C31 12P

IC4
MN101C38CLH
SYSTEM CONTROL/
LCD DRIVE

IC6
C0EBD0000074
RESET

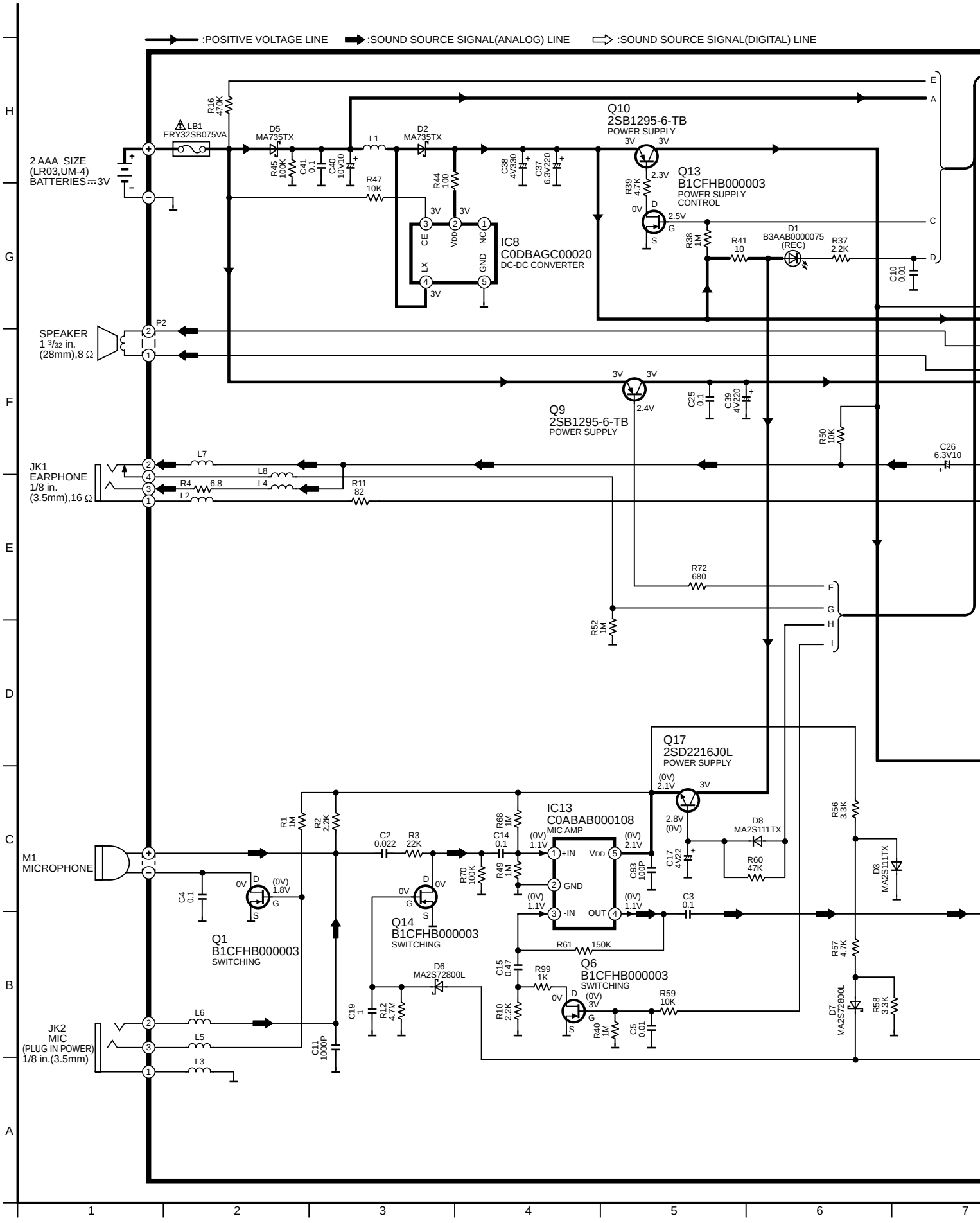
IC12
C0EBB0000036
RESET

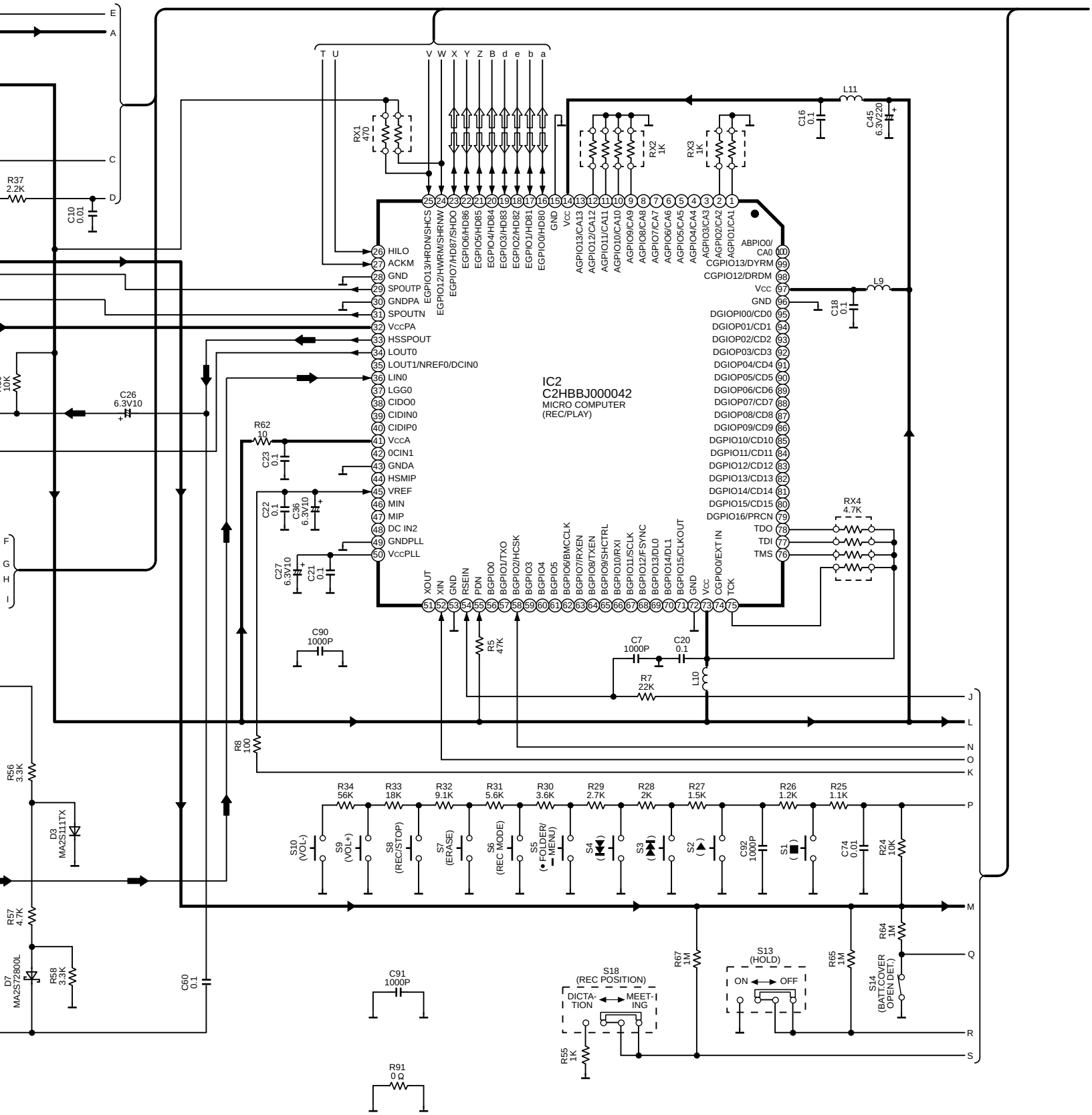
IC9
C3FBQC000014
FLASH MEMORY

RJ1 0Ω

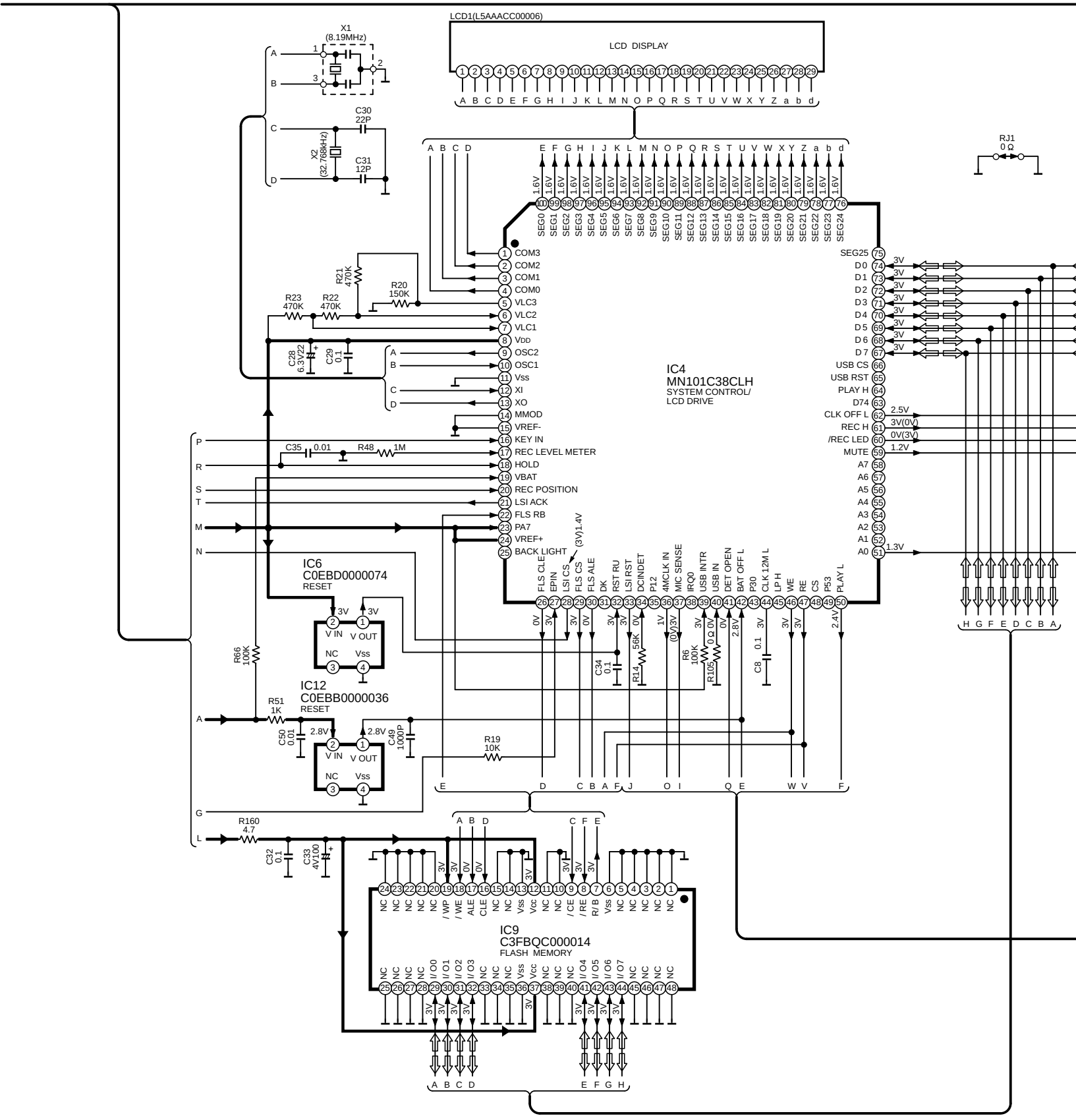
R21 470K
R20 150K
R23 470K
R22 470K
C28 6.3V22
C29 0.1
C35 0.01
R48 1M
R66 100K
R51 1K
C50 0.01
C49 100P
R19 10K
C34 0.1
R14 56K
R6 100K
R105 0Ω
C8 0.1
R160 4.7
C32 0.1
C33 4V100

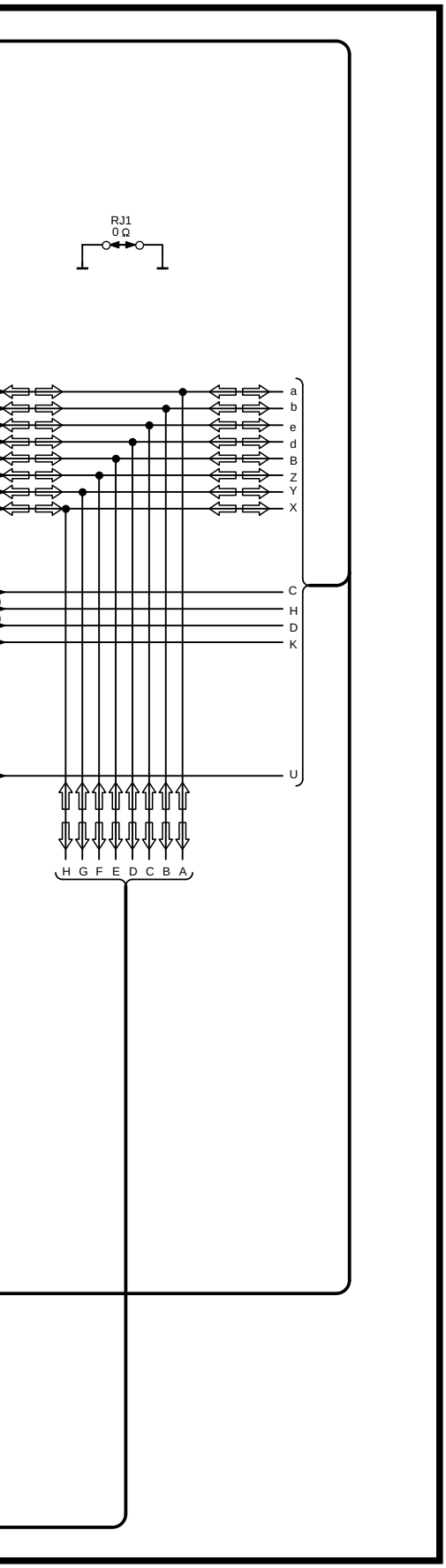
RR-QR160(E) CIRCUIT DIAGRAM


:POSITIVE VOLTAGE LINE
:SOUND SOURCE SIGNAL(ANALOG) LINE
:SOUND SOURCE SIGNAL(DIGITAL) LINE
2 AAA SIZE (LR03,UM-4) BATTERIES 3V
LB1 ERY32SB075VA
R16 470K
D5 MA735TX
D2 MA735TX
L1
R45 100K
C41 0.1
C40 10V10
R47 10K
R44 100
C38 4V330
C37 6.3V220
Q10 2SB1295-6-TB POWER SUPPLY
Q13 B1CFHB000003 POWER SUPPLY CONTROL
R39 4.7K
R38 1M
R41 10
D1 B3AAB0000075 (REC)
R37 2.2K
C10 0.01
IC8 C0DBAGC00020 DC-DC CONVERTER
CE
VDD
NC
LX
GND
SPEAKER 1 3/32 in. (28mm),8 Ω
P2
Q9 2SB1295-6-TB POWER SUPPLY
C25 0.1
C39 4V220
R50 10K
C26 6.3V10
JK1 EARPHONE 1/8 in. (3.5mm),16 Ω
L7
L8
L4
L2
R4 6.8
R11 82
R72 680
R52 1M
M1 MICROPHONE
R1 1M
R2 2.2K
C2 0.022
R3 22K
C4 0.1
Q1 B1CFHB000003 SWITCHING
Q14 B1CFHB000003 SWITCHING
R70 100K
R68 1M
C14 0.1
R49 1M
IC13 C0ABAB000108 MIC AMP
+IN
-IN
OUT
C93 100P
Q17 2SD2216J0L POWER SUPPLY
C17 4V22
D8 MA2S111TX
R60 47K
C3 0.1
R56 3.3K
D3 MA2S111TX
R57 4.7K
D7 MA2S72800L
R58 3.3K
R61 150K
C15 0.47
R99 1K
Q6 B1CFHB000003 SWITCHING
R10 2.2K
R59 10K
R40 1M
C5 0.01
D6 MA2S72800L
C19 1
R12 4.7M
C11 1000P
JK2 MIC (PLUG IN POWER) 1/8 in.(3.5mm)
L6
L5
L3

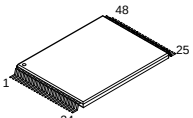
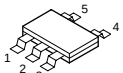
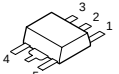
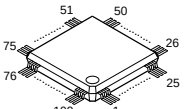
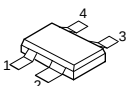
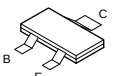
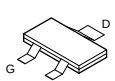
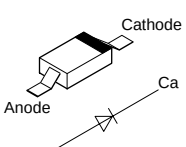
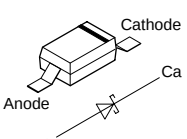
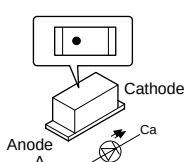
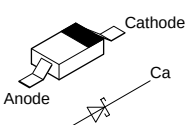

IC2
C2HBBJ000042
MICRO COMPUTER
(REC/PLAY)
HILO
ACKM
GND
SPOUTP
GNDPA
SPOUTN
VccPA
HSSPOUT
LOUT0
LOUT1/NREF0/DCIN0
LIN0
LGG0
CIDO0
CIDIN0
CIDIP0
VccA
0CIN1
GNDA
HSMIP
VREF
MIN
MIP
DC IN2
GNDPLL
VccPLL
XOUT
XIN
GND
RSEIN
PDN
BGPIO0
BGPIO1/TXO
BGPIO2/HCSK
BGPIO3
BGPIO4
BGPIO5
BGPIO6/BMCCLK
BGPIO7/RXEN
BGPIO8/TXEN
BGPIO9/SHCTRL
BGPIO10/RXI
BGPIO11/SCLK
BGPIO12/FSYNC
BGPIO13/DL0
BGPIO14/DL1
BGPIO15/CLKOUT
GND
Vcc
CGPIO0/EXT IN
TCK
TDO
TDI
TMS
ABPIO0/CA0
CGPIO13/DYRM
CGPIO12/DRDM
Vcc
GND
DGIOPI00/CD0
DGIOP01/CD1
DGIOP02/CD2
DGIOP03/CD3
DGIOP04/CD4
DGIOP05/CD5
DGIOP06/CD6
DGIOP07/CD7
DGIOP08/CD8
DGIOP09/CD9
DGPIO10/CD10
DGPIO11/CD11
DGPIO12/CD12
DGPIO13/CD13
DGPIO14/CD14
DGPIO15/CD15
DGPIO16/PRCN
EGPIO13/HRDN/SHCS
EGPIO12/HWRM/SHRNW
EGPIO7/HD87/SHDO
EGPIO6/HD86
EGPIO5/HD85
EGPIO4/HD84
EGPIO3/HD83
EGPIO2/HD82
EGPIO1/HD81
EGPIO0/HD80
GND
Vcc
AGPIO13/CA13
AGPIO12/CA12
AGPIO11/CA11
AGPIO10/CA10
AGPIO9/CA9
AGPIO8/CA8
AGPIO7/CA7
AGPIO6/CA6
AGPIO5/CA5
AGPIO4/CA4
AGPIO3/CA3
AGPIO2/CA2
AGPIO1/CA1
RX1 470
RX2 1K
RX3 1K
RX4 4.7K
L11
L9
L10
C16 0.1
C45 6.3V220
C18 0.1
C10 0.01
R37 2.2K
C26 6.3V10
R62 10
C23 0.1
C22 0.1
C36 6.3V10
C27 6.3V10
C21 0.1
C90 1000P
R5 47K
C7 1000P
C20 0.1
R7 22K
R8 100
R56 3.3K
D3 MA2S111TX
R57 4.7K
D7 MA2S72800L
R58 3.3K
C60 0.1
C91 1000P
R91 0 Ω
R34 56K
R33 18K
R32 9.1K
R31 5.6K
R30 3.6K
R29 2.7K
R28 2K
R27 1.5K
R26 1.2K
R25 1.1K
S10 (VOL-)
S9 (VOL+)
S8 (REC/STOP)
S7 (ERASE)
S6 (REC MODE)
S5 (• FOLDER/ MENU)
S4 ( )
S3 ( )
S2 ( )
S1 ( )
C92 1000P
C74 0.01
R24 10K
R67 1M
R65 1M
R64 1M
S13 (HOLD)
ON
OFF
S14 (BATT.COVER OPEN DET.)
S18 (REC POSITION)
DICTA-TION
MEET-ING
R55 1K
A
C
D
E
F
G
H
I
J
L
N
O
K
P
M
Q
R
S
T U
V W X Y Z B d e b a

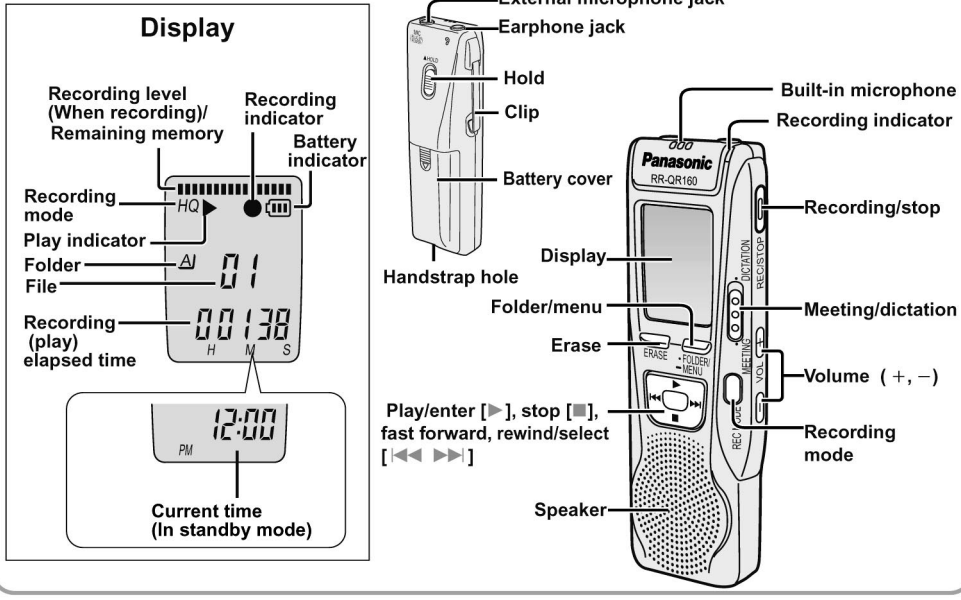
:POSITIVE VOLTAGE LINE :SOUND SOURCE SIGNAL(DIGITAL) LINE

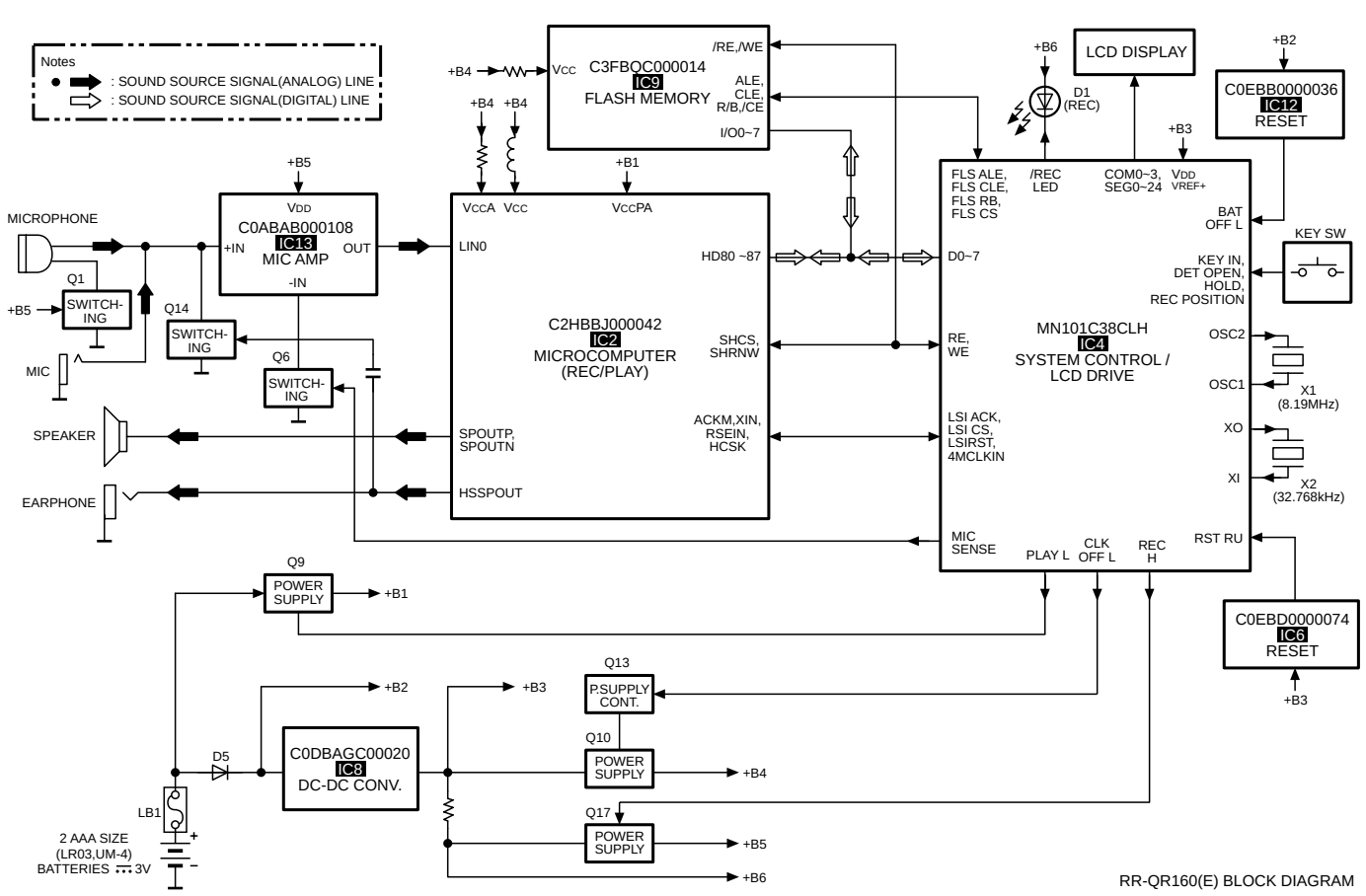




RR-QR160(E) CIRCUIT DIAGRAM

C3FBQC000014	C0ABAB000108	C0DBAGC00020	MN101C38CLH C2HBBJ000042	C0EBB0000036 C0EBD0000074	2SB1295-6-TB 2SD2216J0L
					
B1CFHB000003	MA2S111TX	MA735TX	B3AAB0000075	MA2S72800L	
					


Display
Recording level (When recording)/ Remaining memory
Recording indicator
Battery indicator
Recording mode
HQ
Play indicator
Folder
A
File
01
Recording (play) elapsed time
00138
H
M
S
12:00
PM
Current time (In standby mode)
External microphone jack
Earphone jack
Hold
Clip
Battery cover
Handstrap hole
Built-in microphone
Recording indicator
Panasonic
RR-QR160
Recording/stop
Display
Folder/menu
Meeting/dictation
Erase
Volume (+ , −)
Play/enter [▶], stop [■], fast forward, rewind/select [|◀◀ ▶▶|]
Recording mode
Speaker
DICTATION
REC/STOP
MEETING
VOL
ERASE
FOLDER/ MENU
REC
MODE



RR-QR160(E) BLOCK DIAGRAM

Note: This printed circuit board diagram may be modified at any time with the development of new technology.

(SIDE : A)

2 AAA SIZE
(LR03, UM-4)
BATTERIES ⎓ 3V

SPEAKER

EARPHONE

MIC
(PLUG IN
POWER)

JK1 JK2 P2

IC4 IC9

S9
(VOL +)

S10
(VOL -)

S13
(HOLD)

S14
(COVER
OPEN DET.)

(REP3680A-M)

(SIDE : B)

S8(REC/STOP)

S18(REC POSITION)

S6
(REC MODE)

S5
(FOLDER/
MENU)

S7
(ERASE)

IC2 IC8 IC12 IC13 IC6

M1
(MIC)

LCD1

RR-QR160(E) P.C.B.

:POSITIVE VOLTAGE LINE :SOUND SOURCE SIGNAL(ANALOG) LINE :SOUND SOURCE SIGNAL(DIGITAL) LINE

2 AAA SIZE (LR03,UM-4) BATTERIES ⎓ 3V

LB1 ERY32SB075VA

D5 MA735TX

D2 MA735TX

L1

R16 470K

R45 100K

C41 0.1

C40 10V10

R47 10K

R44 100

C38 4V330

C37 6.3V220

IC8 C0DBAGC00020 DC-DC CONVERTER

Q10 2SB1295-6-TB POWER SUPPLY

Q13 B1CFHB000003 POWER SUPPLY CONTROL

R39 4.7K

R38 1M

R41 10

D1 B3AAB0000075 (REC)

R37 2.2K

C10 0.01

SPEAKER 1 3/32 in. (28mm),8 Ω

P2

Q9 2SB1295-6-TB POWER SUPPLY

C25 0.1

C39 4V220

R50 10K

C26 6.3V10

JK1 EARPHONE 1/8 in. (3.5mm),16 Ω

L7 L8 L4 L2

R4 6.8

R11 82

R72 680

R52 1M

Q17 2SD2216J0L POWER SUPPLY

IC13 C0ABAB000108 MIC AMP

R68 1M

C14 0.1

R49 1M

R70 100K

C93 100P

C17 4V22

D8 MA2S111TX

R60 47K

R56 3.3K

D3 MA2S111TX

R57 4.7K

D7 MA2S72800L

R58 3.3K

C60 0.1

C3 0.1

R61 150K

Q14 B1CFHB000003 SWITCHING

Q6 B1CFHB000003 SWITCHING

C15 0.47

R99 1K

R10 2.2K

R59 10K

R40 1M

C5 0.01

D6 MA2S72800L

C19 1

R12 4.7M

M1 MICROPHONE

C4 0.1

Q1 B1CFHB000003 SWITCHING

R1 1M

R2 2.2K

C2 0.022

R3 22K

JK2 MIC (PLUG IN POWER) 1/8 in.(3.5mm)

L6 L5 L3

C11 1000P

IC2 C2HBBJ000042 MICRO COMPUTER (REC/PLAY)

RX1 470

RX2 1K

RX3 1K

RX4 4.7K

L11

C16 0.1

C45 6.3V220

L9

C18 0.1

R62 10

C23 0.1

C22 0.1

C36 6.3V10

C27 6.3V10

C21 0.1

C90 1000P

R5 47K

C7 1000P

C20 0.1

R7 22K

L10

R8 100

R34 56K R33 18K R32 9.1K R31 5.6K R30 3.6K R29 2.7K R28 2K R27 1.5K R26 1.2K R25 1.1K

S10 (VOL-) S9 (VOL+) S8 (REC/STOP) S7 (ERASE) S6 (REC MODE) S5 (FOLDER/MENU) S4 S3 S2 S1

C92 1000P C74 0.01 R24 10K

C91 1000P

R91 0 Ω

R67 1M R65 1M R64 1M

S13 (HOLD) ON OFF

S18 (REC POSITION) DICTA-TION MEET-ING

R55 1K

S14 (BATT.COVER OPEN DET.)

RR-QR160(E) CIRCUIT DIAGRAM